INSTITUTE OF ENGINEERING AND MANAGEMENT

GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005

LESSON PLAN

Name of the Subject: ENGINEERING MATHEMATICS – III

Name of the Faculty: MOHIT KUMAR ARUK

Semester: 3RD Semester **Branch:** ELECTRICAL/ETC

Semester From: July to December **No. of Weeks:** 15 Weeks

Week	Day	Theory/ Practical Topics	Classes
		Unit 1 - Complex Numbers	6
1	1	Real and Imaginary numbers	1
	2	Complex numbers & Properties of Complex Numbers	1
	3	conjugate complex numbers & Modulus and Amplitude of a complex number	1
	4	Geometrical Representation of Complex Numbers	1
2	5	Determination of three cube roots of unity and their properties	1
	6	De Moivre's theorem & Solve problems on 1·1 - 1·6	1
		Unit 2-**Matrices**	4
	7	Define rank of a matrix & Perform elementary row transformations	1
	8	Perform elementary row transformations to determine the rank of a matrix	1
3	9	State Rouche's theorem for consistency of a system of linear equations in unknowns	1
	10	Solve equations in three unknowns testing consistency & Solve problems on 2.1 – 2.4	1
		Unit-3 **Linear Differential Equations**	10
	11	Define Homogeneous Linear Differential Equations with constant coefficients with examples	1
	12	Define Non – Homogeneous Linear Differential Equations with constant coefficients with examples	1
4	13	Find general solution of linear Differential Equations in terms of C.F	1
	14	Find general solution of linear Differential Equations in terms of P.I.	1
	15	Derive rules for finding C.F. in terms of operator D excluding	1
	16	Derive rules for finding P.I. in terms of operator D, excluding.	1

5	17	Define partial differential equation (P.D.E) .	1
	18	Form partial differential equations by eliminating arbitrary constants & functions	1
	19	Solve partial differential equations & Solve partial differential equations of the form Pp + Qq = R	1
	20	Solve problems on 3.1- 3.6	1
6		**Unit 4 -Laplace Transforms**	12
	21	Define Gamma function and find	1
	22	Define Laplace Transform of a function	1
	23	Define Laplace Transform of Inverse Laplace Transform	1
	24	Derive L.T. of standard functions	1
7	25	explain existence conditions of L.T.	1
	26	Explain linear	1
	27	Explain shifting property of L.T.	1
	28	Formulate L.T. of derivatives	1
8	29	Formulate L.T. of integrals	1
	30	Formulate L.T. of multiplication by & Formulate L.T. of and division by .	1
	31	Derive formulae of inverse L.T. and explain method of partial fractions	1
	32	solve problem on 4.1- 4.6	1
		Unit 5-**Fourier Series**	12
9	33	Define periodic functions.	1
	34	State Dirichlet's condition?	1
	35	State Dirichlet's condition for the Fourier expansion of it's convergence ?	1
	36	State Dirichlet's condition for the Fourier expansion of a function ?	1
10	37	Express periodic function?	1
	38	Express periodic function satisfying Dirichlet's conditions as a Fourier series.	1
	39	State Euler's formulae	1
	40	Define Even and Odd functions?	1
11	41	Define Even and Odd functions and find Fourier Series ?	1
	42	Obtain F.S of continuous functions	1
	43	Obtain F.S. of functions having points of discontinuity	1
	44	5.7. Solve problems on 5.1 – 5.6	1

12		Unit-6 -**Numerical Methods**	4
	45	Appraise limitation of analytical methods of solution of Algebraic Equations	1
	46	Appraise limitation of analytical methods of solution of Algebraic Equations	1
	47	Derive Iterative formula for finding the solutions of Algebraic Equations by : (a) Bisection method (b) Newton- Raphson method	1
	48	solve problems on 6.2	1
13		**Unit-7 -Finite difference and interpolation**	6
	49	Explain finite difference ?	1
	50	Explain finite difference and form table of forward?	1
	51	Explain finite difference and form table of backward difference ?	1
	52	Explain finite difference and form table of forward and backward difference	1
14	53	Define shift Operator?	1
	54	Establish relation between & difference operator.?	1
	55	Derive Newton's forward and backward interpolation formula for equal intervals	1
	56	State Lagrange's interpretation formula for unequal intervals.	1
15	57	Explain numerical integration and state: (a). Newton's Cote's formula.	1
	58	Explain numerical integration and state: (b). Trapezoidal rule.	1
	59	Explain numerical integration and state: (c) Simpson's 1/3rd rule	1
	60	Solve problems on 7.1- 7.5	1

RECOMMENDED BOOKS

1. Higher engineering mathematics by Dr B.S. Grewal, khanna publishers
2. Elements of mathematics Vol-1 by Odisha state bureau of text book preparation and production
3. Text Book of Engineering Mathematics-I by C.R Mallick, Kalayani publication
4. Text Book of engineering mathematics-III by C.R Mallick, Kalayani publication